

# THE AMERICAN JOURNAL OF PHARMACY

NOVEMBER, 1900.

## OINTMENTS.

WITH A FORMULARY OF THE OINTMENTS IN USE AT THE GERMAN  
HOSPITAL, PHILADELPHIA.

BY M. I. WILBERT.

Ointments are among the oldest of our pharmaceutical preparations. Their discovery, or introduction, would seem to date back long before the dawn of any known historic era. The ancient Egyptians used ointments very extensively for medicinal as well as for toilet purposes. According to Dioscorides the use of ointments was so extensive in ancient Egypt that their manufacture had developed into a distinct specialty or art, and the ointment makers of that time were not only numerous, but also highly respected. The same writer, in his *Treatise on Materia Medica*, has preserved the formulas of several of the more popular and well known Egyptian ointments of his time.

From Egypt the art of making these preparations gradually spread to other Oriental countries, where they were and still are quite extensively used, especially for toilet purposes. As a toilet article they were used to counteract the strong and, in many cases, somewhat disagreeable exhalations from the human body; with many of these Eastern people ointments were a substitute for soap and water.

The Jews classed ointments among the necessities of life, and used them freely, especially as an adjunct to the toilet on festive occasions. With these people the non-use of ointments was considered to be a sign of sorrow and mourning.

An indication of the age of this class of preparations is found in

the fact that from the earliest historic times they have been included in the religious practices and ceremonials of various races. Among the Jews temples and places of worship were consecrated and priests, prophets and kings were introduced into their offices by anointing them with sacred ointments.

The old Egyptians anointed their gods and temples on festive occasions, and from here the practice probably spread to Greece and other countries with whom the Egyptians came in contact.

This use of ointment, as a part of religious ceremonial, has been preserved, and in both the Greek and Roman churches of to-day the sacred ointments form an essential part of many of their ceremonies.

The ancient Greeks made use of ointments to anoint their athletes, so as to make their joints more supple and to give them additional strength for the various contests.

From a pharmaceutical point of view ointments are of especial interest for several reasons, one of them the periodic discussions as to the proper or most satisfactory base to be used in their preparation. The number of compounds or mixtures that have been recommended from time to time as a suitable or satisfactory base for ointments are too numerous to even enumerate, to say nothing of entering into a general discussion as to their relative merits. We will confine our remarks, therefore, to a discussion, or, perhaps, what would seem more appropriate, to an expression of opinion as to the relative value and adaptability of lard and petrolatum as a base for the official ointments.

The present United States Pharmacopœia recognizes twenty-three official ointments. In twenty of them lard is the chief ingredient of the base.

The same Pharmacopœia also defines what is meant by the term lard, and gives a number of tests for its identification and the detection of foreign substances or adulterations.

Such pharmacists as have ever applied these tests will admit that it is rather difficult, if not well-nigh impossible, to obtain lard in the open market that will come up to all the requirements of the Pharmacopœia, and that practically the only way of obtaining a thoroughly pure and satisfactory article is to make it, by trying out the so-called "leaf lard," although at times this is rather difficult to obtain, as the large packing houses, who practically control the

supply of meats in the large cities, have entered into the manufacture of lard, lard oil and lard substitutes on an extensive scale, and for this reason do not market the raw product.

When we come to consider the therapeutic use of ointments we find that they may generally be grouped in one of two classes, and are used for either their local or general effect. Those classed in the first group are used for the protective, emollient or stimulating effect of the base, or of the combined base and medicinal ingredient on the skin and superficial tissues. Among these we may mention cold cream, petrolatum and the ointment of oxide of zinc.

In the second class we make use of the base as a vehicle to carry, or, in some cases, to facilitate the absorption of more or less active medicinal ingredients for their resolvent or alterative effect. In this class we may place such ointments as the ointment of potassium iodide, salicylic acid and mercury.

As a vehicle to facilitate the absorption of active medicinal ingredients associated with it in an ointment, lard probably has some advantage over petrolatum, at least that is what the results of physiological experiments would indicate. From a practical point of view, even this may be questioned, as it has been repeatedly demonstrated that such active drugs as potassium iodide, salicylic acid and acetanilid are very readily absorbed into the system from an ointment made up with petrolatum, and even a mercurial ointment made with petrolatum seems to be quite as active as one made with lard and suet, according to the directions of the *Pharmacopœia*.

It is when we are after the protecting and emollient effect of an ointment that petrolatum offers many points of advantage over animal fats, and as a majority of our ointments are used for their local effect on the skin and superficial tissues, it would seem strange that the Committee on Revision of the *Pharmacopœia* has not previously recognized the marked advantages offered by this stable, bland, unctuous material. Both the German and British *Pharmacopœias* have recognized the desirability of supplying a substitute for animal fats in this class of preparations, and for this purpose have introduced as paraffine ointment a mixture of hard paraffine and paraffine oil. This preparation is far from satisfactory, and although theoretically the same as petrolatum, still practically it seems to have distinct physical properties, and will not stand the

same variety of temperature. In warm weather the paraffine usually separates, crystallizing out in granular or in large crystalline masses. The naturally existing mixture of paraffine and oil seems to be more stable than the product of any attempt at imitation.

A few words as to our reasons for preferring petrolatum as a base for ointments :

(1) Economy. Other things being equal, the price of an article always plays a very important part in its selection. In this case the use of petrolatum would effect a saving of from 20 to 30 per cent. in the cost of the majority of ointments.

(2) Non-absorption of the base. This is of decided advantage in cases where a protective covering is the chief object sought for or required. Such ointments as boric acid, carbolic acid and oxide of zinc would meet these requirements better and be more efficacious, while ointments that are used as parasiticides, such as sulphur, tar and red oxide of mercury, would be more practical, less irritating and more stable if made up with petrolatum.

(3) Permanence. There are many readily decomposed chemicals like the mercurial salts that undergo decomposition when in contact with unstable and readily decomposed fats. With this class of chemicals the advantage of using an inert and stable base is self-apparent.

Some seventeen or eighteen years ago, when the question of using a petroleum compound was suggested to the revisers of the United States Pharmacopoeia, it was thought that the supply of petrolatum was too uncertain, and too varied, and for this reason the Committee did not see its way clear to adopt any of the very excellent formulas presented to it by Professor Remington. The same objections do not exist at the present time, and have not existed for ten or twelve years, as upward of half a dozen manufacturers are marketing a product that is practically identical in appearance and in physical properties.

Ointments made up according to the appended formulary have been in use at the German Hospital for the past ten years with uniformly good results and in constantly increasing quantities. During the year of 1899 there were made in the laboratory of the German Hospital 312 kilos of these various ointments.

I would like to add a few words of comment or explanation of some of the formulas.

The ointment of boric acid is practically identical with that of the German Pharmacopœia. It has a wide field of usefulness as a mild antiseptic protective dressing, and deserves a place in our Pharmacopœia.

The other formulas are all more or less familiar. As a rule, they are modifications of official formulas, substituting petrolatum for the usual base. The ointments of belladonna, nutgall and stramonium are more permanent and more slightly than when made up according to the official formulas.

It will be noted that the strength of the ointment of yellow mercuric oxide is but 2 per cent. This is what is popularly known as Pagenstecher's eye salve, and is what the majority of oculists expect to have dispensed when they write for "Ung. Hydrarg. Ox. Flav." The 10 per cent. official ointment is considered too strong to be used in the eye, as an excess of mercuric oxide is apt to be irritating instead of soothing. Many pharmacists when making this ointment do not devote sufficient care to reducing the masses of mercuric oxide to a fine powder, and as a result dispense a more or less gritty ointment. These gritty particles sometimes act as foreign bodies in the eye, and are apt to be quite irritating. We have found a few drops of oil or water to be of decided advantage in reducing the gritty masses of mercuric oxide. In making up quantities of any ointment, it sometimes requires considerable ingenuity to devise ways and means of getting a satisfactory product without the use of expensive machines or the undue expenditure of time. Several of these problems we have solved, at least to our own satisfaction. For instance, in making ointments of boric acid or sulphur, we have found it to be of advantage to melt the petrolatum, remove it from the source of heat, and just as it is about to congeal, sift in the required powder through a fine sieve, constantly stirring the mass. By this means a homogeneous mixture may be readily and easily obtained.

In making the ointment of zinc oxide, we first thoroughly dry the powder, then incorporate it with a portion of the melted petrolatum, keeping the mixture quite hot; this mixture is subsequently run through a No. 40 sieve, and the sieve rinsed out with additional portions of the melted petrolatum, until the required quantity has been added; then stir until cold. This process assures a smooth ointment in which the oxide of zinc is finely divided and thoroughly incorporated with the ointment base.

The ointment of turpentine is practically the compound resin cerate of 1870, with the substitution of petrolatum for the animal fats. This ointment is rather more stimulating than the official cerate, and for that reason more desirable. The ointment of rose water differs from the official in that oil of cotton seed takes the place of the expressed oil of almonds, and the use of distilled water and oil of rose instead of stronger rose water. This formula gives a very smooth ointment that stands well, and while it is not as white as the official ointment, it is correspondingly cheaper.

## OINTMENT OF BORIC ACID.

Boric acid . . . . .	100
Petrolatum . . . . .	900

## OINTMENT OF CARBOLIC ACID.

Carbolic acid . . . . .	50
Petrolatum . . . . .	950

## OINTMENT OF ROSE WATER.

Spermaceti . . . . .	125
White wax . . . . .	120
Oil of cotton seed . . . . .	600
Sodium borate . . . . .	5
Distilled water . . . . .	190
Oil of roses . . . . .	2 drops.

## BELLADONNA OINTMENT.

Alcoholic extract of belladonna leaves . . . . .	100
Diluted alcohol . . . . .	50
Petrolatum . . . . .	850

## OINTMENT OF BELLADONNA AND MERCURY.

Belladonna ointment . . . . .	500
Mercurial ointment U.S.P. . . . .	500

## NUTGALL OINTMENT.

Nutgalls in fine powder . . . . .	200
Petrolatum . . . . .	800

## OINTMENT OF GALLS AND OPIUM.

Powdered opium . . . . .	5
Nutgall ointment . . . . .	95

## OINTMENT OF AMMONIATED MERCURY.

Ammoniated mercury . . . . .	100
Petrolatum . . . . .	900

## OINTMENT OF YELLOW MERCURIC OXIDE.

Yellow mercuric oxide . . . . .	20
Petrolatum . . . . .	980

## OINTMENT OF RED MERCURIC OXIDE.

Red mercuric oxide . . . . .	100
Petrolatum . . . . .	900

## IODINE OINTMENT.

Iodine . . . . .	40
Potassium iodide . . . . .	10
Water . . . . .	10
Petrolatum . . . . .	940

## ODOFORM OINTMENT.

Iodoform . . . . .	100
Petrolatum . . . . .	900

## TAR OINTMENT.

Tar . . . . .	250
Petrolatum . . . . .	250

## OINTMENT OF LEAD IODIDE.

Lead iodide . . . . .	100
Petrolatum . . . . .	900

## OINTMENT OF POTASSIUM IODIDE.

Potassium iodide . . . . .	100
Water . . . . .	50
Petrolatum . . . . .	850

## STRAMONIUM OINTMENT.

Extract of stramonium . . . . .	100
Diluted alcohol . . . . .	50
Petrolatum . . . . .	850

## SULPHUR OINTMENT.

Sublimed sulphur . . . . .	300
Petrolatum . . . . .	700

## OINTMENT OF TURPENTINE (COMPOUND RESIN CERATE).

Resin . . . . .	240
Yellow wax . . . . .	240
Petrolatum . . . . .	300
Oil of turpentine . . . . .	120
Linseed oil . . . . .	100

## OINTMENT OF ZINC OXIDE.

Zinc oxide . . . . .	200
Petrolatum . . . . .	800

## OINTMENT OF ZINC AND ICHTHYOL.

Ichthyl . . . . .	50
Ointment of zinc oxide . . . . .	950

## THE ORIGIN AND HISTORY OF THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

BY MAHLON N. KLINE.

The history of an association which has had so much to do with correcting the evils which existed, and still exist, in the wholesale drug business of this country, and which has been so influential in matters of vital interest to the business side of the retail druggists of this country, is doubtless a proper one to read before this organization. No one is better qualified to write this history than Mr. A. B. Merriam, who was elected Secretary of what is now the National Wholesale Druggists' Association at its first meeting held in 1876, and who has held that position continuously up to the present time. A few years ago, in connection with an article which I then prepared for the *Pharmaceutical Era*, Mr. Merriam contributed the following, which I have concluded to use as a part of this paper :

"The prominent position which the National Wholesale Druggists' Association occupies to-day is in itself a suggestion that there may have been a time in the history of the wholesale drug trade when demoralization in business methods may have existed. Some, who were themselves suffering from causes prolific of danger, determined to improve the condition which then existed in the prosecution of a business which is not only honorable in itself, but should yield a recompense commensurate with the vast amount of capital, talent and energy requisite for its successful accomplishment. The decade following the close of the Civil War was significant of business adventures without experience in the careful training of the counting-room, and the progressive step of advancement of the embryo merchant from the messenger boy to the proprietor. The rapid accumulation of wealth during and immediately following the war had induced many to enter the drug business with their capital, and, with associates ambitious for success, they disregarded not only natural territorial lines of trade, but defiantly challenged competition at all times and everywhere.

"Probably at no time in the history of the drug trade of the country was there as great demoralization in prices and business methods as prevailed during the five years preceding 1876. The ambitious representatives of the leading firms in the West and Northwest were instructed to 'get the trade,' and no limit seemed

to be put upon prices, misrepresentation and intrigue. Leading proprietary goods, consisting of one-third to one-half of the jobber's sales, were alluring 'baits,' and went in with the general order, oftentimes at less than the actual cost delivered at warehouse, not to take into calculation the cost of doing business. The reports of the travellers to the principals were often misrepresentations of the methods of business of their competitors, until a spirit of jealousy and ill-will had been inaugurated which was alike unmercantile and unchristian.

"It was during this condition of affairs that the first effort was made to check the spread of business outlawry in the section of the country named; and to Mr. A. Kiefer, of Indianapolis, belongs the credit of taking the initiatory steps looking to the suppression of the prevailing evils. Mr. Kiefer addressed a communication to Mr. James S. Burdsal, of the wholesale drug firm of J. S. Burdsal & Co., of Cincinnati, calling attention to the demoralized condition of the trade, and afterwards following the letter in a personal visit of consultation with the leading drug firms of that city. While the credit of the advance movement in the proposed reforms has been given to the wholesale druggists of Cincinnati (and justly so), it was part of the plan of Mr. Kiefer that the commanding position of that city would be more effective if the movement was started there, instead of in his own city of Indianapolis. This statement of facts by one familiar with the events at the time is due to Mr. Kiefer, for no 'pre-emption claim' of his has ever been filed for the conception of one of the most successful organizations of the present generation.

"Early in the month of February, 1876, Mr. Burdsal addressed a letter to each of the wholesale drug firms of Cincinnati to meet in the room of the Board of Trade. Every firm was represented, and the meeting was organized by the election of Mr. J. S. Burdsal, Chairman, and Mr. A. B. Merriam, Secretary. The object of the call was presented by Mr. Burdsal, and the views of all present were fully expressed as to the proper steps to be taken. A resolution was adopted calling a convention of all the wholesale druggists of the West and Northwest at such time and place as the majority should favor. The Secretary was instructed to issue a circular letter to the trade, reporting the preliminary action of the druggists of Cincinnati, and the necessity for a general consultation on the disturbed condition of the trade then prevailing. The replies were

prompt and unanimously expressive in favor of the movement, and the majority sentiment decided that the geographical position of Indianapolis was best adapted for the convention. The official call was then sent out, and on the 15th day of March, 1876, the warring elements of the trade first convened. Many had never seen each other before, but by reputation formed by exaggerated reports through unbridled competition they were prepared

“To meet the very d—l in human form,  
Emasculated only of hoof and horn.”

“The registers at the hotels were rapidly filling with the names of well-known firms from Cleveland, Toledo and Pittsburg on the East; St. Paul, Milwaukee, Detroit and Chicago on the North; Louisville and Cincinnati on the South, and St. Louis and other points on the West.

“It was a memorable gathering, and when such men as James Richardson, C. F. G. Meyer, A. A. Mellier, Jacob S. Merrell, St. Louis; Daniel R. Noyes, St. Paul; Henry W. Fuller, Thomas Lord, Peter Van Schaack, Chicago; S. M. Strong, Horace Benton, Daniel Myers, Cleveland; George A. Kelly, John Ewing, B. S. Fahnestock, Pittsburg; Arthur Peter, R. A. Robinson, J. B. Wilder, W. A. Robinson, Louisville; Robert Macready, James S. Burdsal, William S. Merrell, Cincinnati; Jacob S. Farrand, Thomas H. Hinchman, Detroit; Henry H. Button, F. Dohmen, B. B. Hopkins, Milwaukee; Charles West, William C. Williams, Toledo; Robert Browning, A. Kiefer, Daniel Stewart, Indianapolis, met to deliberate on the ‘affairs of trade,’ it augured well for the success of the convention. The first session met in Exchange Hall at 10 o’clock on the morning of the fifteenth of March, and was organized by the election of James S. Burdsal temporary Chairman and A. B. Merriam temporary Secretary.

“Mr. Burdsal, on taking the chair, addressed the convention in a forcible speech, briefly reviewing the action of the wholesale druggists of Cincinnati in the initiatory steps they had taken looking to the call of this convention; the presentation of some of the evils that had fastened themselves upon the trade; the excessive competition, resulting in the general demoralization of values; the unwise and unmercantile policy of sacrificing sound business principles in the strife for precedence, and closed by expressing an earnest hope

that unity of sentiment and harmonious action would prevail in the deliberations of the convention. The Secretary called the roll, when it was found ninety-five firms were represented in person or by proxy. A committee was appointed on permanent organization, who reported the following day, as follows:

- " President—James Richardson, St. Louis.
- " First Vice-President—Robert Browning, Indianapolis.
- " Second Vice-President—Arthur Peter, Louisville.
- " Third Vice-President—R. Macready, Cincinnati.
- " Fourth Vice-President—Thomas Lord, Chicago.
- " Fifth Vice-President—John Ewing, Pittsburg.
- " Treasurer—Samuel M. Strong, Cleveland.
- " Secretary—A. B. Merriam, Cincinnati.

" Previous to the election of officers and adoption of the constitution and by-laws, the following committees were appointed, which reported during the sitting of the convention:

" Committees on Proprietary Medicines; on Credit System; on Circulars and Price Lists; on Western Wholesale Drug Association; Commercial Travellers; Adulterations, and Legislation.

" The reports of those committees, having in charge the special interests which had attracted so large a delegation, voiced to a gratifying degree the expectations of those who were now hopeful for a better condition of things. The discussions were characteristic of the men who had left their business, many of them on long lines of travel, to remedy, if possible, great and crying evils, demoralizing in their influences and destructive to a legitimate profit in a business requiring long experience and a large amount of capital. While it was not expected that the 'day of jubilee' would then be announced, or that the panacea would be offered at this convention which would by fiat of resolution change the hearts and natures of men, it was evident during the two days' meeting that great good would result from it. Competitors met face to face, and earnestly discussed remedies which should commend themselves to the better judgment and reason of sensible business men. Many saw and personally knew each other for the first time, and the bitter acrimony engendered by excessive competition, with heralded reports of 'dishonesty' and 'rascality,' was now assuaged by personal contact and a better knowledge of each other. The hearty handshake of the first meeting will be a talismanic reminder of the

promise to avoid the old evils when temptation comes, and hold fast to promises to the new friends and the better order of things, honestly and manfully adopted in the resolutions and acts of the convention, to which each subscribed. The election of officers, as reported by the Committee on Permanent Organization, and the adoption of the constitution and by-laws were the closing acts in the drama which ushered into being the 'Western Wholesale Drug Association.'

The organization whose early history Mr. Merriam wrote as above continued to be known up to 1882 as the Western Wholesale Drug Association. At the meeting of that association held in Cleveland that year, a large representation from prominent wholesale drug firms in the East was present, and also a large delegation from the Association of Manufacturers and Wholesale Dealers in Proprietary Articles, which is now known as the "Proprietary Association of America." At this meeting, the interests for which the Western Association was originally formed having extended throughout the trade circles of the entire country, it was decided by a unanimous vote to change the title to the "National Wholesale Druggists' Association," and amid great enthusiasm the East joined hands with the West, and the history of the N.W.D.A. in the past eighteen years is a continued repetition of increasing interest and loyalty.

While much has been accomplished by this organization in the way of lessening trade evils in many directions, that which called it into existence in the first place, and has always commanded its chief interest since, is the regulation of the prices of proprietary medicines, composing so large a proportion of the business of the wholesale druggist. The success of the effort to regulate these prices has been so marked since 1882, and is so well known, that it is not necessary to do more than refer to it in this connection. The report of the Committee on Proprietary Articles has always been the most important of all of the reports submitted by the various committees at our annual meetings; and the work of this committee has not been confined to looking after the interests of the wholesale dealers alone, but it was early recognized that the interests of the retailers and of the wholesalers and of the proprietors were so closely related that we were bound to aid in every way in our power in the establishment of a plan which should protect, as far as it was

possible to do so, all three branches of the trade. For this reason the Proprietary Committee of this Association has probably given as much time and thought to the interests of the retailers during the last seventeen years as it has to the protection of our own members. The basis of the plan under which the two national associations (the N.A.R.D. and the N.W.D.A.) are working at the present time was first promulgated by our own Proprietary Committee at the annual meeting in Detroit, in 1893.

The pioneer work in establishing a system of uniform selling prices for proprietary articles was done by this committee under the chairmanship of Mr. Daniel Myers, of Cleveland. Associated with him were a number of men who have continuously remained on the committee since. He was succeeded as chairman by Mr. George A. Kelly, of Pittsburg, and Mr. Kelly was succeeded at the meeting of the Association in Boston, in 1887, by myself. I held the chairmanship for ten years, and at the meeting in Richmond, in 1897, was succeeded by Mr. Frank A. Faxon, of Kansas City, who held the office for three years, and upon resigning at the recent meeting held in Chicago, was succeeded by Mr. C. F. Shoemaker, of this city. The amount of work devolving upon this committee, as already stated, is probably greater than that of any other committee in the Association; and the amount of attention given by it to the interests, both of the retailers and of the proprietors, has not by any means been inconsiderable.

Other trade organizations, which were formed most of them after the N.W.D.A., have attempted to regulate selling prices somewhat upon the same plan as our rebate system; but while our Association has been continuously successful and there has been comparatively little disturbance in prices amongst the wholesale trade, the other organizations have, for the greater part, failed in similar efforts. The reason for this is, of course, not difficult to understand. A proprietary medicine is arbitrarily placed upon the market by its maker at a price and under a name which he arbitrarily controls, and upon which, under the trade-mark laws of the country, he is given a monopoly. He is thus in a position to also control the prices and terms under which he will market his product, and occupies a very different position in this regard from the manufacturer of dry-goods or hardware, or any other class of merchandise.

This regulation of prices has frequently been referred to as a "trust." In the article heretofore referred to, I used the following language, which I think it may not be amiss to quote at this time:

"Even some of our drug trade papers, who ought to know better, have here and there expressed a doubt about our being free from objectionable methods, and it is certain that, notwithstanding the continued efforts by our association to assist the retailers in their struggle against unlimited competition, which was recently aptly characterized in a public utterance as 'a perfect devil's game,' we are suspected of being utterly selfish by a considerable portion of your readers.

"Being, therefore, maligned by the public press, and, to say the least, misunderstood by some in the trade, it may not be out of place to bring before your readers the facts concerning our work. In that portion of this article supplied by Mr. Merriam the condition of the wholesale drug trade which led to the formation of our association has already been fully explained. The error of the maxim that 'competition is the life of trade' had already been discovered, and it could truly be said in 1876, as it can to-day, that, if unrestricted, it would also be its death. The conditions were not solely of our making, but were largely the result of barbarism in commerce, as in the uncivilized times and countries there were barbarisms in war; while in our own country the instruments of war had been changed into ploughshares and pruning hooks, war itself was transferred from the battlefields to the counting house. To correct this, as far as in our power lay, an association was formed, which has been signally and continuously successful, because it so largely devotes itself to efforts to correct 'excessive and unmercantile competition,' and because it seeks 'to remove by concert of action all evils and customs that are against good policy and sound business principles.'

"So long as our actions continue to be in harmony with the above declaration of principles contained in our preamble, we will not be likely to become less influential than heretofore in our own trade, nor in the larger field of commerce of which we are a part."

While the work of the Proprietary Committee has been of the greatest possible value both to the wholesale and the retail druggists of this country, the work which some of the other committees have performed has certainly been far-reaching in its influence. The

Committee on Legislation has constantly been on the alert to defeat proposed laws, State and National, which would have seriously affected the interests of the retailers as well as the wholesalers. The movement for the repeal of the Stamp Tax in the eighties received the hearty and influential support of the N.W.D.A.; and it will not be denied that without this support its repeal probably would not have been accomplished. When it again became necessary to impose a Stamp Tax to meet the expenses of the Spanish War, our Legislative Committee closely watched the interests of the proprietors and the wholesalers and the retailers; but to the Legislative Committee of the Proprietary Association must be given the credit of securing the very important modification in the rate of this Stamp Tax before it was enacted into law by the Senate. The movement in favor of its entire repeal, which we hope will be successfully accomplished at the approaching session of Congress, is receiving probably its most influential support from the N.A.R.D.; but the committee of the N.W.D.A. is certainly seconding their efforts in a very efficient manner.

The reports of the Committee on Adulterations have a value which is not always, I fear, fully appreciated by the pharmacists of this country, nor, for that matter, by our own membership. A careful study of the reports which this committee has made at the several annual meetings of our Association will show that public attention is called, through these reports, to many adulterations which are largely minimized, if not entirely corrected, through this very publicity. In addition to this, our organization is now, by its action at the last three annual meetings, squarely on record as favoring a National Pure Food and Drug Law, and its representatives have been influential, in the several sessions of the Pure Food Congress in Washington, in recommending modifications of the law as originally proposed, to render it less onerous to the retail and wholesale drug trade of the United States.

The organization was called into existence at a time when its founders felt that it was necessary that some concerted action should be secured to correct crying evils. It has been successfully maintained during many more years than its early founders dared to hope it would continue in existence, and it promises to maintain its influence so long as its officers and members will hold to the objects named in the preamble to the constitution which was adopted when the organization was formed in 1876, as follows:

"In order to create a permanent social feeling between the wholesale druggists of the country; to obliterate the feeling of distrust and jealousy that seems to exist; to correct excessive and unmercantile competition; to remove, by concert of action, all evils and customs that are against good policy and sound business principles; to establish rules and regulations, that all differences and grievances may be fairly and equitably adjusted—for this purpose we, the undersigned, form ourselves into an association to be known as the Western Wholesale Drug Association."

This preamble stands for mutual aid in Association work, and for the elevation of business standards and methods. It was sought at the very outstart and has been the continuous purpose since to correct "unmercantile competition," and no one who has studied the history of this Association will for a moment deny that it has in many instances during the years of its existence succeeded in accomplishing this.

It has extended its influence and directed its action to the alleviation of the "unmercantile competition" existing amongst the retailers as well, whom we have always recognized as our allies, and in whose success we have always recognized that we have a vital interest. It has also not been unmindful of the interests of the manufacturer.

It has, in short, been largely unselfish as an organization in its work, and so long as unselfishness dominates its action it is sure to remain a permanent organization which will be both an example and an inspiration to other mercantile bodies.

Some of these, it will be admitted, have used their associations solely for the purpose of furthering their own selfish interests, and as a result have passed into oblivion.

I close by expressing the hope that our membership will be able to permanently display its motto, adopted at the time the wholesale druggists of the West first founded this organization, viz., that "They builded better than they knew."

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#### SOME NOTES ON JALAP.

BY ALFRED HEINEBERG.

Owing to the uncertainty in value of specimens of crude and powdered jalap, the author undertook a series of investigations, at the

suggestion of Prof. Henry Kraemer, for determining the value of this drug.

Jalap conforming to the Pharmacopœial requirements as regards quantity of resin appears, judging from the reports of several investigators, to have been, and is to-day, the exception rather than the rule.

Various methods for the valuation of the drug have been set forth from time to time, all depending, more or less, upon the difference in the procedure for extracting the resin; indeed, in only one instance (that of Professor Hager, mentioned below) has any other point except a pharmaceutical assay been suggested as indicating the value of jalap.

The following gleanings from the reports of different investigators will serve to demonstrate the character of the work done on the drug during the last fifteen years.

Mr. G. H. Chas. Klie (Proc. A. Ph. A., 1887, p. 118) found powdered jalap to contain as high as 12.17 per cent. of resin; other samples contained 5.52 per cent., 10.28 per cent., 9.9 per cent. and 6.6 per cent., respectively.

Dr. Squibb (Proc. A. Ph. A., 1888, p. 328) assayed samples of jalap and found the range of resin to be from 6.19 per cent. to 18.5 per cent.; average, 8.8 per cent.

The analysis of samples, between the years 1879-1888, of jalap for making the extract and resin is as follows:

1879 . . . . .	125 pounds powdered jalap gave 17 " per cent. resin.
1882 . . . . .	220 " " " 13.4 " " " 1 lbs
1883 . . . . .	107 " " " 7.6 " " " 1 T
1885 . . . . .	100 " " " 7.9 " " " 1
1888 . . . . .	250 " " " 15.6 " " "

At that time Dr. Squibb stated that there was not a bale of jalap in the New York market that would yield 12 per cent. of official resin.

Dr. Squibb (*Ibid.*, 1889, p. 427) since his last report (1888) watched the drug markets for jalap and obtained no samples yielding over 9 per cent. of resin, and only two samples which gave over 7.5 per cent.

He sent a special messenger to Jalapa, Mexico, and obtained less than 200 pounds "produced in the old way in the old location" which assayed 16.9 per cent. resin.

Prof. F. A. Flückiger, commenting on this report of Dr. Squibb, offers the assertion that "since twenty years ago jalap tubers yielding 10-17.6 per cent. of resin were of frequent occurrence, and that now (1890) none yielding 10 per cent. can be obtained." The cause of inferiority was the partial extraction of resin by the dealer in Mexico.

E. Dieterich found the yield for 1888 and 1889 to have been 7.1 per cent., 7.7 per cent. and 8.1 per cent.

M. Bouriz (Proc. A. Ph. A., 1883, p. 119) extracted jalap according to Codex method, with the following results:

Picked commercial jalap gave 12.5 per cent., 7.5 per cent., 10.5 per cent., and 8 per cent. of resin.

Virgil Coblenz (*Ibid.*, 1883, p. 120) assayed twelve samples of powdered jalap, and results varied from 3.8-16.2 per cent. of resin, with an average of 8.1 per cent.

"The process recognized by the German Pharmacopoeia (*Ibid.*, 1883, p. 120) for distinguishing between light and heavy jalap consists in assay for resin. This is too circumstantial, and what is more, can be extended to only one tuber."

Dr. H. Hager resorts to specific gravity to separate light from heavy tubers.

He employs a solution of common salt, specific gravity 1.140-1.142 at 15°-17° C., and says: "Not less than 90 per cent. of tubers immersed should sink; all of which do not should be rejected." For good tubers have a specific gravity of between 1.15 and 1.18.

F. W. Aycock (Proc. A. Ph. A., 1893, p. 409) remarks that "examination of many samples of powdered jalap confirms the often expressed opinion that the official standard of 12 per cent. of resinous constituents is too high."

Mr. Goff (Michigan Ph. Ass. Proc., 1898, p. 52) examined eight specimens of the drug, with the following results: 6.75 per cent., 8.36 per cent., 8.45 per cent., 9.44 per cent., 9.69 per cent., 8.44 per cent., 10.33 per cent., 8.08 per cent. of resin.

The author of the present paper, at the suggestion of Professor Kraemer, considered the following points in the valuation of this drug: (1) Specific gravity; (2) assay; (3) quantitative microscopical estimation of crystals; (4) quantitative microscopical estimation of starch.

Two lots of jalap were taken, which for convenience we will call *A* and *B*; the tubers of *A* were broken open, and those light in color and starchy were separated from those dark in color and resinous.

The tubers of *B* were also broken open, but not separated.

The specific gravities of pieces of each lot were found to be as follows:

<i>A.</i>		<i>B.</i>
Starchy.	Resinous.	
1.131	1.346	1.274
1.186	1.358	1.282
1.102	1.348	1.267
1.131	1.345	1.281
1.298	1.371	1.284
1.157	1.380	1.330
1.264	1.352	1.363
1.176	1.365	7) 9.081 1.297 average.
1.276	1.339	
1.198	1.352	
1.207	1.409	
1.210	11) 14.965	
12) 14.336	1.360 average.	
1.194 average.		

The tubers should be broken open before specific gravity is taken, for in some very large spaces were found.

The assay for resin, according to the method of the Pharmacopœia, resulted as follows:

<i>A.</i>		<i>B.</i>
Starchy.	Resinous.	
1.76 p.c. resin.	6.62 p.c. resin.	7.64 p.c. resin.

Crystals of calcium oxalate were estimated both in whole sections of the drug and in the powder. In the whole sections, crystals in the cortical layer only were counted, for most sections contained but few crystals scattered through the portion enclosed by endodermis.

The crystals are generally in rosette-shaped masses; occasionally, however, large cubical ones are seen. There are also present a very

small quantity of crystals of a carbohydrate in somewhat larger rounded masses than those of calcium oxalate. These carbohydrate crystals were not included in the estimation when it was possible to exclude them.

The sections were cleared by boiling in chloral-glycerin solution. Results are here appended:

*A.*  
STARCHY TUBERS.

Specific Gravity.	Number of Crystal Masses	in Millimetres of Section.
1.131	260	2.5
1.264	71	7.5
1.176	80	5
1.298	414	23
Total . . . . .	825	38

In 1 millimetre there were about 17 crystals on the average found.

RESINOUS TUBERS.

Specific Gravity.	Number of Crystal Masses	in Millimetres in Length.
1.380	170	10
1.348	541	15
1.352	531	17
1.346	375	4
Total . . . . .	1,617	46

In 1 millimetre there were 35 crystals of calcium oxalate on the average.

No.	<i>A.</i>		<i>B.</i>
	Starchy.	Resinous.	
1	68	99	90
2	75	98	105
3	84	180	104
4	86	129	110
5	103	125	129
6	112	5) 629	5) 538
	6) 528	125 to a mg.	107 to a mg.
	88 to a mg.		

The estimation of crystals in the powdered drug was conducted along lines recommended by Prof. Henry Kraemer (AMER. JOUR. PHARM., October, 1897).

The crystal masses were very often broken up and scattered.

The number of masses, whole or scattered, in each milligramme of the different lots are given in above table.

For the estimation of starch the drug was ground to No. 80 powder, and the examination was conducted along the same lines as the crystals, with some modifications.

After the chloral-glycerin solution was added, instead of heating, each portion was thoroughly mixed with the edge of the cover glass before it was laid on.

As in the crystal estimation, ten readings were made on each milligramme of powder, but in this instance the field of the high-power lens was taken instead of that of the low-power. That portion of the field which contained the greatest number of starch grains was found first with the low-power lens and then that point of this field in which the starch grains were most abundant was taken as the place for counting the grains with the high-power. In this connection the author wishes to state that in the field were included only such grains as were loose, or imbedded in tissue not more than two layers deep; tissues which contained such large quantities of starch as to make counting impossible were not included; in fact, were not permitted under the high-power lens.

The results of the readings are enumerated:

No.	A.		B.
	Starchy.	Resinous.	
1	328	108	146
2	346	127	200
3	341	181	185
4	432	149	176
5	357	150	183
6	338	129	890
	6) 2,141	844	178 to a mg.
	356.8 to a mg.	140 to a mg.	

On placing these facts together we have the following:

No.	Per Cent. Resin.	Specific Gravity.	Crystals to Milligramme.	Starch to Milligramme.
1	1.76	1.194	88	357
2	6.62	1.360	125	140
3	7.64	1.297	107	178

It is apparent, therefore:

- (1) That the increase in specific gravity appears to be due more to the amount of crystals of calcium oxalate than resin.
- (2) That the increase in crystals is accompanied by an increase in resin, though possibly not in corresponding proportion.
- (3) That, in the specimens of jalap examined, there is approximately an increase of 50 per cent. in crystals and a decrease of 50 per cent. in starch in those assaying 6.62 per cent. and 7.64 per cent. resin over that assaying 1.76 per cent., or, in other words, the two lots of better quality contained 50 per cent. more crystals and 50 per cent. less starch than jalap of poorer quality.

#### NOTES ON THE CULTURE OF DRUGS.

BY FREDERICK T. GORDON.

*Belladonna*.—The seeds of belladonna were supplied by Mr. Kilmer, of J. & J., and were, I believe, from selected English stock. These were planted on May 5th, and later, on May 14th, in beds of different soils and with varying amounts of sunshine and shade and water. The seeds first planted, for some reason, did not appear above ground, as plants of course, until well on towards the end of June; those planted later came up on June 18th as two tiny leaves much resembling beets.

These were allowed to remain in the original bed until 3 or 4 inches high and were then transplanted, which method, by the way, seems to give the best results; plants not transplanted did not grow nearly as well as those that were.

The soils were sandy loam, garden loam and loam with stable manure. Plants did best in loamy soil with manure, in a plot that had shade part of the day; those in sandy soil and exposed to the sun all day did not reach a good growth.

The net results at the end of three months (when the experiments had to be discontinued because of filling of the ground) were plants of sturdy growth from 18 to 30 inches high, large leaves of good color and appearance, roots about 10 to 17 inches long, some  $\frac{3}{4}$  inch in circumference when green, drying to about half this size. I am firmly of the opinion that belladonna can be cultivated successfully in these latitudes with very little trouble and expense, and that the plant will in course of time become adapted to our soil and climate.

*Hyoscyamus*.—The seeds for hyoscyamus were from Mr. Lochman, of Bethlehem, Pa. They were planted at the same time as the belladonna, those planted on May 14th, only, coming up. The plants rapidly increased in size, and by the end of August were covered with large leaves and were in full bloom. I allowed some of them to remain and from these have secured quite a quantity of seed, the leaves drying up on the plant. The conditions as to soil, exposure, etc., were about the same as for belladonna, with the same results, only hyoscyamus seems to thrive much better than belladonna, the plants reaching maturity a month or so earlier. Hyoscyamus can be grown easily here, and will give good results as to leaves, root, etc.

*Carthamus*.—This plant, I am told, is now a common flower in up-State gardens; anyway, it flourished with me as if to the manor born, and the only trouble I had with it was to keep the flowers picked fast enough to permit of a new growth. On the average, from each flower I got 1 grammie of dried petals, etc., which yielded a fine yellow color to alcohol and water, water extracting the most of the coloring.

*Aconite*.—The seeds of aconite came through the Department of Agriculture. Unfortunately, not a single one rooted, and I could not get a result with any sort of soil or planting. I believe tubers will have to be planted to get any growth.

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BISMUTH IN ORGANIC PREPARATIONS can only be determined, according to Gaebler (*Pharm. Zeit.*, 1900, p. 567), by rather distinct methods for each substance. In bismuth oxyiodogallate (airol) the bismuth is precipitated as oxalate; bismuth  $\beta$ -naphtholate (orphol) can be safely ignited and the bismuth determined; with bismuth salicylate, incineration, extraction of the residue with nitric acid and ignition is quite accurate; bismuth tri-bromphenol (xeroform) is treated with strong nitric acid, precipitated with ammonium carbonate and the precipitate converted into  $\text{Bi}_2\text{O}_3$ .

RECENT LITERATURE RELATING TO PHARMACY.<sup>1</sup>

## THE CULTIVATION OF MEDICINAL PLANTS.

The most noteworthy thing that has transpired is the revival of interest in the subject of the cultivation of medicinal plants. It seems to become more and more recognized that the time is not far distant when we will be as dependent upon the agriculturist for medicinal plants and timber as we are to-day dependent upon him for our food products.

A valuable article on the cultivation of medicinal plants in Europe appeared in the *AMER. JOUR. PHARM.*, April, 1900. In an editorial in the same number the subject is further treated with its possibilities, as well as an enumeration of plants given which have been cultivated successfully in the United States. At the Richmond meeting of the A. Ph. A., the Chairman of the Scientific Section further called attention to the same subject, with the result that a committee was appointed to bring the matter of drug cultivation before the Secretary of Agriculture. It is also interesting to note the efforts of the Professor of Pharmacognosy in Michigan University in securing several acres of ground for the purpose of cultivating medicinal plants for purposes of research. All these events indicate not only an interest in the subject, but emphasize the fact that there is need for consideration of the matter. Twenty years ago there was just as much interest felt as to-day, only the exigencies of the situation were not felt. To-day, however, the gathering of medicinal plants is restricted to but certain portions of the South, and the reckless extermination without regard to future collections is making an impression upon those who utilize plant products for medicinal and economical purposes.

The cultivation of ginger has proved so remunerative in Jamaica that measures have been taken to cultivate the plant-yielding ginger in St. Lucia, Dominica and Barbadoes. In Samoa, it is said that kola and vanilla are being planted.

One of the most valuable practical books relative to growing plants is "The Cyclopaedia of American Horticulture," to be pub-

<sup>1</sup> This department contains a *résumé* of the work in botany and pharmacognosy during the past year, and is the substance of a report presented by Henry Kraemer, Chairman of the Committee on Botany of the Pennsylvania Pharmaceutical Association, June, 1900.

lished by the Macmillan Company, and edited by L. H. Bailey and W. Miller. This will undoubtedly be of value to those who are to engage in the cultivation of medicinal plants.

#### NEW PLANTS AND DRUGS.

Th. Peckolt is continuing his writings upon the medicinal and economical plants of Brazil in the Berichte of the German Pharmaceutical Society. Duyk, also, is continuing his investigations upon Mexican drugs (see *Bull. Soc. Pharm. Brux.*, XLIII, and *Bull. Comm.*, XXVIII). J. S. Ward has described some West African plants in *Pharm. Jour.*, 1900. Several Indian plants have been examined by S. Camphuijo (see *Nederl. Tijdschr. v. Pharm.*, 1899). The arrow poisons of Wagogos, according to Schellman, are obtained by boiling the bark of two trees of the N. O. Euphorbiaceæ. *Pilocarpus racemosus*, of the French Antilles, is given by Rocher as a new source of jaborandi. The leaves contain 0.6 per cent. of pilocarpine and 0.4 per cent. of jaborine. David Hooper has shown that the ancient Eastern medicine, *Akakia*, is an astringent extract of an acacia.

Schumann has added to our knowledge of the kola exported between Senegal and Angola. All seeds are wrapped with the leaves of *Cola cordifolia*. The large seed (siguru) is obtained from *Cola vera*; whereas the small seed (kotofo) is the product of *C. acuminata*. The natives of Bali also employ the seeds of *C. lepidota* and *C. anomala*.

According to H. Moeller, *Rheum Fransenbachii* does not furnish any of the commercial rhubarb. Ergot from rice grown by Indians in Northern Wisconsin has been examined by R. H. Denniston. The seeds of *Brucea Sumatrana* (N. O. Simambaceæ) are used in China and India for dysentery. Heckel and Schlagdenhauffen find that they contain quassin and saponin; but Bertrand and Physalin believe that the activity is due to a glucoside, kosamin. Murcia lemons are entering the markets during the winter months. They are distinguished from Messina or Palmero lemons in possessing a smoother skin and cleaner appearance. A new rubber plant of Lagos (*Fantumina elastica*) is described by Staph. *F. Africana* (syn. *Kicksia Africana*) does not appear to yield any rubber. *Catha edulis* contains, according to Schaer, large quantities of caoutchouc, an ethereal oil, alkaloid and tannin. Large edible

tubers called native yams are yielded by *Parsonia paddisoni* (N. O. *Apocynaceæ*). Piralaby rubber is the product of *Landolphia perieri*, H. Jumelle, of Madagascar. Altamasano has extracted from Coniza, one of the Mexican *Compositæ*, a glucoside, called lennesine.

In Merck's Annual Report for 1899 the following new drugs are described: (1) *Folia Mayteni Vitis Idæi*; (2) *Folia Combreti Raimbaulti*; (3) *Fructus Prosopis strombuliferae*; (4) *Herba et Radix Brachycladi Stuckerti*; (5) *Herba et Fructus Blepharis Capensis*; (6) *Natri* (several species of *Solanum*); (7) *Radix Tachiæ Guyanensis*; (8) *Semen Bondue* (the seeds of *Guilandina Bonducella* and *Cæsalpinia Bonducella*).

#### INVESTIGATIONS ON OTHER DRUGS.

Collin has prepared in the *Jour. Pharm. Chim.* an interesting article on the anatomy of fictitious teas, such as "Kaporie," "Caucasus," etc. In the same journal and by the same author is an illustrated paper on *Hydrastis Canadensis*, L. This is admixed with *Cypripedium parviflorum* and *Stylophorum diphyllum*. The morphology and anatomy of the Japanese lacquer tree (*Rhus vernicifera*) is described in *Abhandlung. d. Senckenbergische naturforsch. Gesellschaft*. In the Bulletin Iowa Agric. College is given by Pammell the geographical distribution of *Solanum Carolinense*. Grace E. Cooley has shown that in the autumn leaves of *Hamamelis* (which contain most tannin) the walls of the hairs are thickened and colored yellow. Several species of *Polygala* (*P. violacea*, St. Hil., and *P. caracasana*, H. B. K.) have been found by Dethan in commercial ipecac. Small jaborandi leaves have been utilized as an adulterant in coca. Greenish has described a new spurious senna, while Micko has described a false cinnamon bark.

#### PLANT CONSTITUENTS.

There has been the usual activity among investigators during the past year in ascertaining the origin as well as nature of the constituents of drugs and economical plants. Hesse has contributed a valuable paper on the *Solanaceous alkaloids*. The active principles of *hyoscyamus* are chiefly hyoscyamin with some atropin and hyoscin; belladonna root contains an excess of atropine; scopolia rhizome contains chiefly hyoscin and some atrosin, both of these bases being present in commercial scopolamin. It appears that

the alkaloids in scopola are more constant in quality and quantity than those found in either the leaf or root of belladonna.

In an investigation of the various commercial rhubarbs Hesse finds that *Chinese rhubarb* contains chrysophanic acid, emodin, rhabarberon and rhein; Austrian rhubarb (*R. rhabarcticum*) and English rhubarb (*R. palmatum*) contain chrysophanic acid and rhabontin; *Rumex nepalensis* and *R. palustris* contain chrysophanic acid and nepodin; *Rumex obtusifolia* contains chrysophanic acid, nepodin and lapodin.

Tschirch holds that the emodin of aloes and frangula is isomeric and that they can be distinguished by certain color reactions as well as other tests, as shown by Oesterle. Tschirch further holds that all methylanthraquinone derivatives containing one or more oxy-groups are purgative. The emodins (being tri-oxy compounds) seem to be most active, and it appears that these oxy-derivatives of methylanthraquinone will eventually replace the drugs themselves.

The following alkaloids are present, according to H. A. D. Jowett, in *Jaborandi*: Pilocarpine, iso-pilocarpine (pilocarpidine of Petit and Polonowski), pilocarpidine (Harnack and Merck). Commercial jaborine appears to be a mixture of these three alkaloids, and does not appear to be present in jaborandi leaves. According to Wentzel the alkaloid in mandragora root is hyoscine ( $C_{17}H_{19}NO_3$ ). Reeb finds in wall-flower a principle resembling digitalis in its physiological action (cheiranthin), and in the seeds an alkaloid (cheirinine) resembling quinine in its properties. Various species of Lupines have been again investigated, this time by J. Callsen, who did not succeed in isolating any other alkaloids than those already known from the seeds of blue and perennial lupines. The active principles of cusso have been investigated by Kondaker and Schatz. Kiliani has continued his investigations upon the active principles in digitalis. The active principle in capsicum has been further investigated by Micko, who insists that it is odorless, and that the vanilla-like odor ascribed to it by Mörbitz is due to the action of reagents employed. An emetic principle (melonemetine) has been isolated by Herberger from melon root and other Cucurbitaceæ. The toxic effect of tobacco smoke is ascribed by Thoms to a phenol-like body resembling creosote. A new oily alkaloid ( $C_9H_{18}NO$ ) miscible with water has been found by A. Piccinni in pomegranate bark. J.

Thomann considers that the daturine in the seeds of *Datura stramonium*, L., is in the nature of a reserve product. The flowers of *Datura alba* contain hyoscine, and Hesse considers that it may supersede the mixture known as scopolamine salt. Investigations seem to show that there is no caffeine in the leaves of any species of *Psathura* (N. O. Rubiaceæ). H. A. Martin has contributed a paper on the history of quinine and the barks yielding quinine. Pommerhue has made a number of crystalline compounds of the alkaloid (damascenin) extracted by Schneider from *Nigella damascena*. H. Meyer has found that anemonin forms compounds of the maleic and fumaric types. According to Hausman, aspidin is found in *Aspidium spinulosum*, whereas filicic acid is present in *A. filix-mas* and *Athyrium filix-femina*. A crystalline, non-glucosidal principle (gossypol) obtained from cotton seeds has been examined by Marchlewski. The bitter principle of *Plumiera lancifolia*, investigated by Boorsma and Merck with discordant results, is shown by Franchemont to vary in its melting point according to the amount of water of crystallization that it possesses.

Houdas has been studying the glucosidal principle in ivy. According to Léger, nataloin and horonataloin give a green coloration with sulphuric acid and manganese dioxide or potassium dichromate, and a violet color with a solution of soda containing ammonium-persulphate. The investigations of Busse indicate that in unripe vanilla fruit there exists a glucoside which, on treatment with ferments (emulsin) or mineral acids, yields vanillin. According to Aweng there are two groups of cathartic glucosides in frangula, the primary glucosides being best suited for liquid preparations.

The arrow poison of Wakamba (German East Africa) appears to be a glucoside, and resembles Arnaud's ouabain. S. E. Boorsma has extracted Curangin (the glucoside of *Curanga amara*) from the Scrophulariaceæ by means of ethyl alcohol. According to the investigations of Hilger, while the coloring principle of saffron is a glucoside, the glucoside picrocrocin (or saffron bitter) is really a mixture of coloring principles, one of which resembles carotin.

Malabar kino has been shown by David Hooper to possess in dry substance over 90 per cent. of tannin. *Hymenea courbaril* contains 23.8 per cent. catechutannic acid and 2.7 per cent. catechin. A. G. Perkin has been continuing his studies on the tannin and coloring principles in a number of plants. A yellow coloring principle has

been isolated by Adrian and Trillat from the digitalin obtained from *Digitalis lutea*. The authors believe it to be different from the digitoflavone of Fleischer. The green and red pigments of *Amanita muscaria* have been subjected to a chemical examination by A. B. Griffiths. A. Nestler believes that the change in color on ripening of juniper berries is due to the presence of a fungus.

The investigations of Charabot on the formation of lavender oil seem to indicate that the oil in flower buds and mature flower is richer in esters, whereas in the withered flowers the alcohols preponderate. The origin of the oil cells in *Cinnamomum cassia* has been described in *Festschrift f. Schwendener*, 1899. According to G. Spampiani, the oil in olive is produced especially in the cells of the mesocarp during the activity of the protoplasm and not on account of the degeneration of the latter. The paper of van Romburgh in *Ann. Jard. Bot. Buitenzorg*, 1899, shows further the widespread distribution of methyl salicylate and hydrocyanic acid in the vegetable kingdom.

The malic acid in the berries of *Hippophae rhamnoides* is identical with the acid in *Pyrus aucuparia*. Greshoff has investigated Pisang wax, the product of an unknown plant of Lower India. The carbohydrates of tragacanth have been reinvestigated by Widstoc and Tollens. Xylose was obtained from the white and arabinose from the brown varieties, respectively. Dulcite, and not mannite, has been found by Hoehnel in *Euonymus atropurpureus*. The same carbohydrate is present in *E. Europaeus*.

According to J. Grüss, the enzyme in *Penicillium glaucum* acts less powerfully on starch or reserve cellulose, but more energetically on cane sugar, than malt diastase. Seminase, the ferment of leguminous seeds possessing a horny albumen, differs from malt diastase in that its action is less active on starch, but more active on albumen of the locust bean than diastase. An enzyme (hadromose) has been found by Marshall Ward in the fungi (*Pleurotus pulmonarius* and *Merulius lacrymans*) which destroy the liquefied cells of timbers.

#### COMMERCE AND STATISTICS OF DRUGS.

At one of the meetings of the Pharmaceutical Society in London Mr. Holmes read a paper on "The Commerce of Drugs," in which he treats more especially of strophanthus, aconite root, Pareira brava, scammony, saffron and pilocarpus. This, with the interest-

ing discussion, will be found printed in the *Pharmaceutical Journal*, 1900, pp. 278 and 283.

The total output of cinchona bark from Java during 1898 amounted to 11,150,000 Amsterdam pounds. Besides this, 500,000 ounces of quinine sulphate were manufactured in Java during the same period.

Consul Clennel does not regard the diminished importation of opium at Wuhu during the past few years, as compared with the years 1885-1895, as indicating the lessening in the prevalence of the opium habit, but rather as a sign that the opium grown locally is supplanting that imported from outside provinces, the importations of opium having been in recent years but slightly over 200,000 pounds, as compared to 600,000 some years ago.

The fact that the trade in licorice root from Aleppo, Turkey, in 1899, has decreased 6,616 tons in amount and 40,966 £ in value is accounted for by the *Chemist and Druggist* by the fact that American buyers of last year postponed the shipment of part of their goods until the spring of 1900. The importation of licorice root into Marseilles is now 1,436 tons annually and has been steadily increasing during the past six years.

#### BOTANICAL NOMENCLATURE.

A number of papers upon the subject of botanical nomenclature have appeared in *Proc. Linnean Soc.*, *Botanical Gazette* and *Bulletin of Torrey Botanical Club* during the past year. The most noteworthy is that of Dr. Kuntze, who argues for the adoption of 1737 as the starting point for generic names in botany, and 1753 for specific names, with the future exclusion of all publications between Linnaeus's *Genera Plantarum* of the former date and his *Species Plantarum* of the latter date.

#### SOME NEW BOOKS.

The last volume of the "Flora of Ceylon," which work was commenced by Henry Trimen in 1893, and continued since the death of the latter by Sir J. D. Hooker, has been published during the past year. This concluding volume contains a key to the orders, genera and aberrant species of the flowering plants of Ceylon, besides other information relating to the species. There are also comprehensive indices to the entire work.

The second edition of Wiesner's "Die Rohstoffe des Pflanzenreichs" has been begun and is coming out in parts. The book is to be revised by Prof. Julius Wiesner, with the assistance of a number of botanists, chemists and others.

A. Meyer and K. Schumann are continuing the publication of the new edition of Berg and Schmidt's "Atlas der officinellen Pflanzen." The work of Engler and Prantl, "Die natürlichen Pflanzenfamilien," is appearing in parts as heretofore.

Several works have been published by American authors: "Morphology and Histology of Plants," by H. H. Rusby and S. E. Jelliffe; "Microscopy and Micro-Technique," by A. Schneider; and the second edition of Sayres' "Manual of Organic Materia Medica and Pharmacognosy," which contains a section on histology and micro-technique, by Wm. C. Stevens.

Several pharmacognostical works have also appeared abroad, the most important being another Lieferung of Oesterle and Tschirch's "Anatomischer Atlas der Pharmakognosie und Nahrungsmittelkunde." L. Braemer and A. Sins have also issued an "Atlas de Photomicrographie des Plantes Medicinales." A work upon "Die Mikroskopische Analyse der Drogenpulver," by Ludwig Koch, is also appearing in parts.

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## THE YEAR'S ADVANCE IN TECHNICAL CHEMISTRY.<sup>1</sup>

BY ALBERT W. SMITH.

The year just passed has been perhaps the most important of the whole century in the advance made in all manufacturing industries, especially those having a chemical basis. This advance has been brought about, in a few instances, by the application of radically new methods, but more often by a wonderful enlargement of the scale of operations of well-tried processes, and by the general introduction of automatic mechanical devices and labor-saving machinery. Everywhere the striving for increased tonnage and for getting the very largest possible yield out of each piece of apparatus employed has been more intense than ever before.

Considering first the industry which is of greatest commercial and economical importance in the United States, the metallurgy of iron

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<sup>1</sup> Amer. Chem. Jour., 1900, p. 520.

and steel, the most striking change is the practical doubling in capacity of most of the newly-designed blast-furnaces. The daily output of the coming furnace must approach 600 tons of pig metal, while the maximum for most furnaces heretofore has been a daily average of from 200-300 tons. When we consider that only a decade ago an output of 100-150 tons daily was considered good practice, we can appreciate the magnitude of the change and wonder where the limit of the future is to be. The greater part of this increase has been caused by doubling, or more than doubling, blast pressures and blast quantity, thereby increasing the yield of existing furnaces and rendering possible larger hearth diameters.

A considerable increase of economy in the use of fuel for making pig iron seems to have been accomplished abroad by the direct use of furnace gases in gas motors for producing the air blast, instead of burning this gas to generate steam and using steam engines to operate the blast pumps. The solution of this problem is cause for congratulation, because of the numerous difficulties connected with it. The gas from iron furnaces available for such motors contains only about 25 per cent. of carbonic oxide, as almost its whole source of heat value, besides carrying large quantities of fine dust of coke, ore, etc., which greatly increases the difficulty of use in any mechanism where corrosion must be avoided. Any one who has seen the valves of a hot-blast stove cut through and worn out in a few months by the action of this dust will appreciate its cutting power.

In Scotland, furnaces using raw coal have made as a by-product about a tenth of all the ammonia produced in Great Britain during the year. Certain localities in the United States possessing abundant non-coking coal in proximity to cheap and good ore might profitably adopt this method of iron manufacture, notably the new Michigan coal district of the Saginaw Valley, which, by this means, could easily supply the whole of the iron used in Michigan districts and all of the ammonia needed in the newly developing alkali industries of that locality.

Another important factor in the great increase of furnace capacity for the production of pig iron has been the installation of automatic labor-saving devices for handling furnace charges and removing furnace products. The most important of these are the car and ore-loading machines of Brown, McMyler, Lindsey and Hulett, the

casting machine of Uehling for handling the metal, and the various methods for carrying charges to the furnace top, with automatic dumping and distributing devices. These latter have removed the necessity for charging men or any laborers continuously at the charging level, where the work is exhausting and dangerous. By the use of a double bell they effect a thorough mixture of the charge and prevent the loss of furnace gases.

The successful conversion of blast furnace slag into a fair quality of hydraulic cement at a number of furnaces is a long step toward the economical solution of the troublesome problem of the disposal of this vast by-product. It has been found that certain grades of basic slag in which the proportion of magnesia and sulphur is not too high, by simply being granulated with water as they flow from the furnace, ground extremely fine and intimately mixed with the proper proportion of lime, are converted into a hydraulic cement which forms a cheap and, under certain conditions, an excellent substitute for Portland cement, and for which a permanent demand has been created.

In the production of steel the gap between the cost of producing Bessemer and open-hearth metal has been further lessened, mainly by the general introduction of basic open-hearth furnaces of greatly increased capacity and of labor-saving devices in charging metal and fluxes. Most important of these latter is the charging machine of Wellman. In this connection, too, the large introduction of the Wellman tilting open-hearth furnace during 1899 is worthy of mention, and a probable further economy of operation will be secured by their use. Several large plants using these tilting furnaces have been installed during the past year, and, while they have been used in a number of places heretofore, the record of their efficiency has not as yet been made public and is awaited with great interest. While their cost of construction is about 25 per cent. more than that of the older stationary type, the complete removal of all metal and slag from the furnace hearth at each operation, with the resulting saving of metal, the saving of the time necessary for tapping, the small amount of repair necessary to the bed after the removal of each charge, and the facility with which this can be accomplished are factors which will probably cause this to become the standard type of steel furnace of this decade.

In Bessemer practice the most noticeable improvement is the

general introduction of the Jones mixer for receiving the molten pig metal direct from the furnace, thus saving its contained heat and doing away with cupolas for melting the iron previous to its treatment in the converter. This method effects not only a saving in heat or fuel, but a greater gain in the cost of handling the iron. It has been found that only about one laborer in a hundred can endure the strain of continuously handling the heavy pigs of metal at the blast furnace in their removal from the sand moulds and loading on cars. The doing away with this severe labor by the direct use of hot metal in the Bessemer plant and by the use of the Uehling casting machine seems, therefore, a gain to humanity as well as in the money value saved. The basic converter still fails to gain a permanent foothold in this country, and, because of our immense deposits of pure ore and beds of phosphate rock, and of the continued encroachments of the open-hearth process, probably never will.

The metallurgy of copper has undergone changes similar to those of iron, only in a much smaller degree. The most important of these are the increased use of the Bessemer converter in refining mattes, and an increased output of electrolytically refined metal. The general use of a gold-bearing material as a lining for the converter in matte Bessemerizing has effected a material economy. In roasters for copper sulphide ores, several new devices have gained general use. A Denver-made modification of the old Spence furnace, with its numerous beds and automatic plow rakes, in which the operating chains are placed upon the exterior of the hearth, and the Herreshoff furnace, consisting of a vertical cylinder with horizontal diaphragms or beds and rakes operated by a central shaft, have perhaps received the largest installment during the year. A plant of considerable size to operate the Hoepsner process of refining copper has been in operation for some time, but reliable cost data are not at hand. This process depends upon dissolving the oxidized metals with cupric chloride and electrolyzing the chloride solution. The process was tried at the Brooklyn experimental plant of a copper-nickel refining company some years ago, but was abandoned.

In the metallurgy of nickel the principal event has been the installation in England of a considerable plant to use the Mond process of refining by carbonic oxide, and of a plant in this country

utilizing a new but unpublished process. Storer's method proposed, but not yet installed on a commercial basis, applies the old Hunt and Douglass copper method to nickel ores, treating nickel oxide at high temperature with a strong solution of ferrous chloride.

In the treatment of lead, tin, silver, mercury and zinc ores, changes during the year seem to have been unimportant. Several methods have been proposed for treating the low-grade argentiferous blonde-galena ores, so common in Colorado, but none has as yet stood the test of successful commercial application.

The output of gold has been further increased by the installation of many new cyanide works, much of the material treated in these mills being the tailings from old amalgamation plants or of abandoned dump heaps. Electrolyzing the cyanide solutions in this process is becoming more common. The Sulman-Teed method of adding a small quantity of cyanogen bromide to the lixiviating solution is claimed to effect increased gold extraction, especially in arsenic-bearing ores, but it is also asserted by many that the loss of cyanogen by this method is too great for success, and more time must be allowed for further evidence. A method of assisting the free access of the oxygen probably necessary to the solution of gold by cyanide solutions, which consists in violently agitating the ore with the solution by means of air introduced into the mixture under considerable pressure, has been patented and is now being largely advertised under the name of the "Pneumatic Process." A possible serious objection to the use of this method is that an increased loss of cyanide may occur from excessive oxidation and decomposition by carbonic dioxide. During the years immediately following the marked success of the cyanide process in South Africa, the tendency was to introduce this method for all sorts of ores and under all sorts of conditions, whether adapted to success in this way or not. Now the proper limitations of the use of cyanide solutions are better understood, and the chlorination process is again receiving more attention, so that the two methods are now beginning to assume their proper and normal relation to each other. Increasing amounts of gold and silver are being recovered by matting the ores with copper- and sulphur-bearing material, Bessemerizing this matte to blister copper, and electrolyzing the product.

In several industries the year has been marked by the beginning of that vast shifting of location from coal to water-power situations

which is to mark the coming decade. In several cases this shifting has already been nearly completed, notably in the production of chlorate. Norway, Scotland, Switzerland and the mountain regions of France and the United States, where waterfalls abound, are destined to become centres of manufacturing activities fully as great in many industries as the older coal localities, and with the advantage that the coal fields once exhausted are gone forever, while water powers last for all time. This recent great development of the uses of water-power is due to new electrolytic processes, to material improvements in the transmission of high-tension currents, to improvements of dynamos, and to the development of water turbines to utilize extreme pressures. This transference of many old industries to water-power districts will be limited only by the cost of carriage of the raw material to the plant, and of the finished product to its market. The competition with coal-generated power thus occasioned must result in a more and more economical use of fuel, and the year has shown material progress here. The previously mentioned use of blast furnace gases in gas motors is of this nature, but the very large year's increase of by-product coke-oven plants is of greater significance. In America new ovens of the Semet-Solvay or the Hoffman type have been started during the year at Halifax, Boston, Glassport, Pa., Benwood, W. Va., and Ensley, Ala. This is a satisfactory improvement, because the wasteful use of coal in bee-hive ovens will always remain a reproach of the nineteenth century, especially in American and English practice. These by-product coke ovens effect an increase of from 10 to 15 per cent. in the amount of coke produced, with a saving of 3-4 per cent. of the weight of coal tar, 0.4-0.8 per cent. ammonium sulphate, and 7-10 per cent. gas in excess of that required for coking. These last three items almost equal in value the coke produced.

The skill and care required in operating the Mond gas producer, considerable fluctuations in the price of tar and ammonia, and the high cost of construction and depreciation of plant have restricted the introduction of this most valuable invention to a few localities, but a number of such plants have been started during the year and with considerable success. Probably the most important progress in the use of fuel, and our greatest present hope of delivery from the smoke domination in soft coal districts, lies in the success of the Dellwick water-gas process which the past year has shown. In this

device the fuel is burned directly to carbonic dioxide during the heating, or air blast period, by using extra high blast pressure, and skilfully distributing its contact with the fuel. This increases the gas yield by nearly 100 per cent., and reduces the total loss of the heat value of the fuel from 55 to only 18 per cent. During the past year a plant has been installed in Pittsburg for the conversion of coal into fuel gas, utilizing a radically new method, which also bids fair to solve this important fuel question, and the result of this experiment is awaited with intense interest.

In many instances, where petroleum has been used as fuel, its recent increased cost has forced its abandonment. This has made the discovery of an equally convenient and efficient fuel a great desideratum. Fortunately such a substitute for oil has been found in the use of finely-powdered bituminous coal, injected into the furnace with an air blast just as oil is used. The coal is thoroughly dried and ground very fine. Its only drawback seems to be almost explosive combustibility, rendering its storage unsafe. The temperature attainable by this means seems to be almost equal to that with oil, and in respect to cost and some other considerations it is more advantageous.

During the year a wonderful growth in the manufacture of Portland cement has taken place in the United States, so that within the coming decade we may reasonably expect to supply all of the home consumption and probably a great part of that used in other countries. The principal improvement in methods has been the general introduction of the automatic rotary kiln or burning furnace. These consist of inclined steel cylindrical shells, about 60 feet long, mounted on rolls and lined with magnesia brick. The cement mixture is pumped with water or fed dry by a screw into the upper end and falls out as burned clinkers continuously at the lower end. The fuel used is oil, gas, or powdered coal, the process is continuous and requires a minimum of manual labor. The success of this invention, which has been brought about commercially in the United States first, has been so pronounced that American experts have been called to the oldest and best cement-producing districts in the world to reconstruct their plants on the new lines.

In the manufacture of sulphuric acid, 1899 has seen the successful beginning of the greatest revolution since this acid began to be produced on a large scale, namely, the production of sulphuric trioxide,

$\text{SO}_3$ , by the contact power of finely-divided platinum on a mixture of sulphurous oxide and air. This reaction was long ago discovered by Winkler and utilized for making dry sulphuric trioxide and fuming acid, but the heat produced soon checked the reaction, and the converting power of the platinum soon gave out. The experts of the Badische Anilin and Soda Manufacturing Company, a few years ago, discovered the cause of the latter trouble to be the presence of dust and foreign gases, principally arsenic and phosphorus compounds, and much moisture. By using purified gas and providing a way of escape for the excess of heat generated by the reaction, the process became quantitative, even with dilute sulphurous anhydride, and hence commercially possible for making all kinds of sulphuric acid. Many German acid makers are reported to be rapidly eliminating their lead chambers and using platinized asbestos or pumice-stone instead. The new method is especially economical for the strongest acids, the stronger the acid to be made the greater the economy over the nitre method. Weaker acids, up to chamber acid strength, are probably still made much more cheaply by present methods. The new process is best also for making the purer grades, for, by using pure sulphurous gas, chemically pure acid can be made as cheaply as any other.

The latest antagonist by which the old salt-cake and muriatic acid soda and bleach industry has been assailed, namely, the electrolytic process of chlorine and soda production, has, during the past year, developed into such a giant that, with its older competitor, the ammonia-soda process ever enlarging, the death of the LeBlanc process cannot be postponed many years. Only in Great Britain does the process, by virtue of the retaining energy of immense capital invested, survive to any considerable extent. On the European continent ammonia soda had practically expelled it without the assistance of electrolytic methods. In this country it never had a foothold. In England it has survived mainly because of the profit on the chlorine industries. Now electrolytic methods have removed this last prop, producing bleach as cheaply as the value of the hydrochloric acid used in the older processes. No competition is really ever likely to exist between the ammonia soda and electrolytic processes, because the soda produced by electrolysis is of little worth compared with the value of the halogen. The electrolytic production from salt of all the bleach used would produce only an

eighth of the soda required for the world's consumption. There is even some possibility that hydrochloric acid may be made eventually by uniting electrolytic chlorine and hydrogen. The principal electrolytic processes so far successfully installed are the Kastner-Kellner mercury method, with large plants at Niagara Falls and in England, the Hargreaves-Bird process, using an asbestos diaphragm, with a considerable plant at Liverpool, and the large works at Leopoldschall. The plant at Rumford Falls, Me., using platinum electrodes, went out of operation during the year. Probably the momentum of large capital invested in the chamber acid plants and in the LeBlanc soda process will maintain for both a more or less profitable existence for a number of years to come, in spite of all competition.

The great change in the chlorate industry has already been referred to. Practically all that in use is now made by electrolysis. There has been a marked decrease during the year in American imports of chlorate, soda and caustic, due to the installation of large ammonia-soda works at Syracuse, Detroit and Bay City, and another large works is now under construction at Barberton.

The manufacture of calcium carbide has grown during the year to immense proportions, but with a maintenance of prices, showing a large increase in its use. In Germany nearly all of the railway coaches are now lighted by a mixture of one-third acetylene and two-thirds Pintsch gas, resulting in both an increase of light and decrease of cost.

Another product of the electrical arc furnace which has been largely manufactured during the past year and has found an even larger demand is graphitized electrolytic carbons. It is found that when ordinary pressed carbons are packed in charcoal and placed in the path of a large electrical current so as to be intensely heated for a considerable time, the carbon of which they are composed is practically converted into graphite. Such graphitized carbons, owing to the uniform texture which they are given, and to the higher power to resist oxidation, are found to have two or three times the life of ordinary carbons for all electrolytic purposes, and their use is rapidly growing.

In the manufacture of wood spirits a greater purity of product has been brought about by greater care in fractioning. Also many new externally heated retort plants are replacing old kiln-furnaces

with internal firing for making charcoal, and greater economy is being attained in acetate production.

In the way of rubber products, the new substitute, Reid's "velvril," is claimed to have had a successful year's trial in England, and to have gained a large use. Velvril is a drying oil which has been nitrated, mixed by a common solvent with nitrocellulose, and the solvent subsequently removed. Castor oil is said to be used, and, after nitration, contains 4-5 per cent. of nitrogen. This, with nitrocellulose, forms a clear, homogeneous, rubber-like mass, its hardness being wholly under control by varying the relative proportions of the two ingredients, from a consistency like vulcanite to that of the softest rubber. The article to be made may be shaped from the mixture while softened by a solvent, or formed into shape by high pressure and heat somewhat above 100° C. In spite of its nitrated character it is not explosive, but burns slowly and quietly. Numerous uses are claimed for the new compound by its inventors, including insulating material, clothing, belting, varnish, paint, enamelling of leather, cement for wood, glass, metal, etc., hose and tubing, and even as a modifier of the explosive rate and power of guncotton and nitroglycerin. If only a small proportion of these claims stand the test of continued use, a most valuable discovery has been made, and a substance of the widest applicability and use found at an exceedingly opportune time, because of the enormously increased demand for rubber in so many industries.

Not even a few of the inventions and processes described above were actually begun or perfected during 1899, but all for the first time last year stood the test of continued practical use. Inventions almost without number are recorded every year, but it would take an omnipotent judge to select those that are destined to work industrial revolutions, and their description or bare enumeration would be of little interest and less value here. The record given has, therefore, been confined to those inventions and changes which the year has recorded as of permanent value, and which have proved themselves commercially successful.

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SALICYLIC ACID IN PRESENCE OF CITRIC ACID may be determined, according to Jorissen, as follows: 10 c.c. of the liquid are mixed with four drops of a solution (10 per cent.) of potassium or sodium nitrite, four drops of acetic acid and one drop of a solution (10 per cent.) of copper sulphate. The mixture is heated to the boiling point, and if salicylic acid is present a blood red color is produced.

EDITORIAL.

MEMORIALS.

The unveiling of the monument to Pelletier and Caventou at the recent International Pharmaceutical Congress in Paris suggests several thoughts to American pharmacists at this time. In 1902 the American Pharmaceutical Association will celebrate its fiftieth anniversary, and a few years ago it was proposed by Albert E. Ebert, Chicago, that something be done by that Association (see Proc., 1899, p. 115) to revive the memory of Prof. William Procter, Jr. It is not too early to consider what form of a memorial will be most appropriate, and which will do the most good in not only reviving the memory of Professor Procter, but more particularly in benefiting the living. The question arises, who of the living are to be benefited? Is pharmacy to be lifted from its unpretentious position to become more intimately associated with the arts and sciences? Are the schoolboy and he who finds pleasure among the monuments of our parks and cities to be thrilled with the silent influence of a faithful life? Is it the student in pharmacy who is seeking a more liberal education, but whose pecuniary position is such that he is either debarred from, or seriously handicapped in, attaining his highest goal and noblest aim?

I. It is very probable that a memorial in the nature of a monument, with its attendant ceremonies, would be for the public in the nature of a flame, that would grow on, and with the increase in years become stronger and brighter, illuminating the apothecary's shop and making the public recognize the debt of gratitude that is due him, through all these years, for his unselfish labors and his helping hand that is extended at all hours and at all times. All of us feel more or less of the silent but perpetual influence of monuments. Bunker Hill monument in Boston, the Grant tomb in New York City, as well as the smaller monuments commemorating important historical events, or the records of the world's great men, scattered in not only large cities, but in every town and hamlet, are the inspiration of us all, particularly if we know the history of the event, or the record of the life thus perpetuated. Monuments may be looked upon as among the greatest educational influences of the civilized world. They are educational influences of the very best character, not only embodying and preserving man's noblest ideals and highest pur-

poses, but also inspiring and encouraging the humblest to hope for the most, and to persevere in spite of all conditions and circumstances. Monuments furthermore serve as a kind of connecting link between all the avocations and vocations of men. The liberator of the oppressed stands with him who has mitigated the ravage of disease. The poet or painter, with his inspiring creations, stands with the mechanic or business man who has increased the comforts of life, or with the philanthropist who through his benevolence has established homes, hospitals and asylums. Monuments in imperishable bronze serve the double purpose of elevating the calling to which they are dedicated, as well as of inspiring the race.

Pharmacy occupies a peculiar position at present. She is about to emerge from the obscurity of the past into the light of the present, and receive the just recognition that is due her. Her administrators are mixing more with the outside world, and taking very active interest in public and benevolent as well as municipal affairs, and they are showing that they may be unselfish in not only the apparently insignificant but important work of the retail pharmacist, but in affairs which concern the city and State. Monuments representing achievements in pharmaceutical investigation or perpetuating the memory of distinguished representatives of this art would serve additionally to impress upon the public their relationship to the apothecary and raise pharmacy to its proper place among the arts and sciences.

II. Scholarships and fellowships are in the nature of memorials, which may be looked upon as being more businesslike in their conceptions and operations. Like hospitals and other benevolent institutions, they are most appreciated by those who have most need of them. Scholarships and fellowships in commemoration of events or the lives of individuals serve to perpetuate the incidents of the former or the memory of the latter. They are like family heirlooms, without the sacred tie of blood and inheritance. The individual who benefits from the use of scholarships and fellowships may be inspired to do a great work and may be grateful for the opportunities afforded, but more generally he recognizes the hand and not the heart, appreciates the help received, but neither the motive of the donor nor of the friends who mean to do something that shall be in the nature of a memorial. Scholarships and fellowships are not sentimental products; they are, in some respects, infinitely more. They become

principals to associations and colleges; indeed, they serve the purpose of endowment. They benefit continually, as a rule, the poor and deserving student. They are the means at the command of the investigator and professional man, whose labors enlighten the world. They contribute to institutions of learning what is most needed, viz., means to enable those whom fortune has not smiled upon to prosecute intellectual pursuits; they do for the world infinitely more good in providing means for intellectual pursuits by those who are to be its savants and contributors to science than is possible probably from any other form of memorial. Apparently, however, they do not so much emblazon the memory of those in whose honor they are created as monuments, but who can question their real value in furthering the cause of progress and enlightenment? The name of some great man or woman is necessary, as a rule, to create a sentiment for raising funds to be used in the establishment of fellowships and scholarships.

III. Medals have also been recognized as a form of memorial in which the recipient carries with him the face of him who is thus commemorated. This is probably the most inefficient form of memorial. As a tribute of friends to the living medals are peculiarly appropriate, but as tributes of friends or associations, commemorating acts of those who have departed, they are singularly devoid of power in the world at large or even to the donor. In some places medals may have some significance. But the greater the man, the less the disposition to display medals and the more likely is he to forget that he even possesses them, as we recall that Bunsen had frequently to be reminded to wear the medals which had been showered upon him by learned societies and institutions from all over the world.

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#### REVIEWS AND BIBLIOGRAPHICAL NOTICES.

DIE MIKROSKOPISCHE ANALYSE DER DROGENPULVER. Ein Atlas für Apotheker, Drogisten und Studierende der Pharmacie von Dr. Ludwig Koch. Erster Band: Die Rinden und Hölzer. 2. Lieferung. Leipzig: Verlag von Gebrüder Borntraeger. 1900. Preis, 3 Mrk. 50 Pf.

The present fascicle contains descriptions of the following barks: *Cinnamomi chinensis*, *Citri fructus*, *Condurango*, *Frangulae* and *Granati*.

The author gives the characteristics in powders that are fine (Sieve No. VI), middle fine (Sieve No. V) and coarse (Sieve No. IV). The treatment of each drug is of the more abundant tissues, the seldom occurring tissues and the diagnostic and important cells with their contents, and, finally, the preparation of the powder for examination. Numerous accurate plate illustrations accompany the work and serve to make it a valuable contribution to scientific and practical pharmacognosy.

COLLECTIONS FOR AN ESSAY TOWARDS A MATERIA MEDICA OF THE UNITED STATES. By Benjamin Smith Barton. Philadelphia, 1798 and 1804. With biography and portrait.

The Lloyd Brothers have been for some time considering the advisability of utilizing a number of the rare works on the shelves of the Lloyd Library of Pharmacy and Botany, in a manner that will conserve the interests of scientific societies and libraries. The plan adopted by them is to publish, in as nearly fac-simile as possible, the rarest of the early works connected with pharmacy, *materia medica* and botany, and to supply them by exchange to journals and societies connected with these branches of science, and also at the nominal price of \$1.00 per issue to persons who desire them for their private libraries.

The first of this reproduction series is work by Benjamin Smith Barton, which is recognized as the first English attempt at a *materia medica* of American plants. In this reproduction the Lloyd Brothers have also added as an introduction an excellent portrait and a biography of this author. This is an unusual opportunity for libraries and others to obtain fac-similes of these old but invaluable historical reference books at a price that is unusually reasonable. The members of scientific societies and libraries and scientists generally will appreciate the thoughtfulness upon the part of the Lloyd Brothers and will look forward to the reproduction of Peter Smith's *Dispensatory*, only one copy of which is known to exist, which is promised in the second bulletin.

THE ART OF DISPENSING. A Treatise on the Methods and Processes Involved in Compounding Medical Prescriptions. Sixth edition, revised and enlarged by Peter MacEwan. Published at the offices of the *Chemist and Druggist*, 42 Cannon Street, London, E. C. 1900.

This valuable symposium on the art of dispensing has been entirely recast and has been increased from 288 pages to 498 pages. At least two-thirds of the book is new. The contents of the book are: First Principles; General Suggestions; Weights and Measures; Prescribers and Dispensers; Special Drugs and Dispensing Conveniences; Pills and their Excipients; Ingredients of Pills and How to Mass Them; Finishing and Coating Pills; Tablets, Lozenges and Pastilles; Capsules, Powders; Suppositories, Bougies and Pessaries; Ointments; Plasters; Pastes and Jellies; Mixtures; Emulsions; Supplementary Notes on Emulsions; Applications; Incompatibles; Foreign Prescriptions; New Remedies; Homœopathic Dispensing; Illegible Prescriptions; Examination Prescriptions; Appendix of Terms to Occur in French and German Prescriptions; Abbreviations used in Prescriptions; Table of Doses and other Valuable Information.

The work is just what is needed by the practical pharmacist, and is one of the most rational books on the subject, as it treats of *why this and that is done* in compounding medicines, and brings the art nearer the science of dispensing.

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#### MINUTES OF THE PHARMACEUTICAL MEETING.<sup>1</sup>

The first of the series of the pharmaceutical meetings of the Philadelphia College of Pharmacy for 1900-1901 was held on Tuesday, October 16, 1900, in the Museum of the College. A number of representative pharmacists were present, and all the indications point to a successful series of meetings. Dr. Richard V. Mattison presided, and after making some brief preliminary remarks, called

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<sup>1</sup> The Pharmaceutical Meetings of the Philadelphia College of Pharmacy have been held almost continuously since January 24, 1842, on the third Tuesday of each month, from October to May, inclusive.

The object of these meetings is the presentation of original communications, the exhibition of specimens and new forms of apparatus, and the discussion of subjects of general and practical interest to pharmacists.

These meetings are open not only to the members and graduates of this College, but to all who are interested in pharmaceutical matters. Any one who can contribute to the value of them, by written communications or by the exhibition of any specimens or preparations which are likely to prove interesting, is cordially invited to participate.

Committee: Richard V. Mattison, M.D., Prof. Joseph P. Remington, Ph.M., F. W. E. Stedem, Ph.G., H. L. Stiles, Ph.G., and Prof. Henry Kraemer, Ph.D.

upon the first speaker announced on the program, Mr. Mahlon N. Kline, who then read a paper on "The Origin and History of the National Wholesale Druggists' Association." This was not only an interesting communication of itself, but is valuable as forming one of a series of papers having to do with the history and development of various pharmaceutical organizations, as well as the different departments of pharmacy. This paper appears in this number of the JOURNAL.

The second paper was entitled "Ointments, with a Formulary of the Ointments in Use at the German Hospital in Philadelphia," and was presented by Mr. M. I. Wilbert, apothecary of that institution. The paper, which appears in another part of this JOURNAL, gave rise to a most interesting discussion. Mr. Frederick T. Gordon said that, wherever a drug employed in an ointment was to be absorbed, an addition of water favored the action, and that the rapidity of absorption seemed to increase in proportion to the increase in incorporation of water. He said that cold cream was an ideal ointment in this respect.

Professor Remington stated that the subject of ointments when approached from a pharmaceutical point of view was very different from that of the dermatologist. The apothecary is apt to consider pharmaceutical advantages, as appearance, stability, etc., and that in accomplishing these he often loses sight of the object that the physician has in view. He cited an instance where a child suffering from wet eczema was treated with a glycerinated zinc ointment where the customary ointment was intended, and suffered greatly thereby. He thought that the number of official ointments might be reduced, and that the selection of base should be left to the physician. Mr. Joseph W. England thought that petrolatum was an efficient base in an ointment when its action was upon the epidermis, but that when systemic effects were to be had an addition of water to the ointment greatly facilitated its absorption and increased the action of the medicament. He referred to a series of experiments in which it was shown that salicylic acid in an ointment was much more effective when cerate or lanolin were employed as the base.

Mr. F. W. E. Stedem said that there was no trouble in securing good lard for pharmaceutical uses. He exhibited a specimen which he had been using for some years, and which he said could be

obtained of at least two manufacturing houses at very reasonable prices. He said that we should not object too seriously to the trouble connected with preparing lard if necessary for use in ointments. This he urged on the ground that the tendency on the part of clerks to avoid, as much as possible, any work connected with the making of preparations is becoming quite marked. He also remarked that Deshler's salve is a preparation which he sells in large quantities, and submitted a formula which he uses in making the preparation :

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Resin	.....	.....	.....
Wax $\ddot{\text{a}}$ $\ddot{\text{a}}$	.....	.....	12 parts.
Petrolatum	.....	.....	18 "
Turpentine (oleoresin)	.....	.....	6 "

Fuse the resin, wax and turpentine, and when thoroughly mixed add the petrolatum and again mix; let stand a few minutes until foreign matter subsides, and then pour off carefully into the container and let cool without stirring.

Dr. C. B. Lowe said that he thought the reason why Deshler's salve was not in the recent editions of the U.S.P. was because it was in the nature of a local preparation, and was not generally used outside of Philadelphia.

Mr. George M. Beringer said that petrolatum of higher melting point was more largely used on account of the high temperatures experienced during the summer season. He remarked that in making the ointment of the yellow oxide of mercury there was a tendency on the part of clerks to mix the oxide with the whole amount of base, whereas the oxide should be rubbed with but a small part of the base at first and then the base incorporated. In referring to the question of the variation in consistency of commercial lard, he said that the quality was due to locality, and seemed to depend on the manner of feeding the hogs from which the lard was obtained; that corn-fed hogs gave a more solid lard than that obtained from those fed on swill.

A note on this subject was furnished by C. Carroll Meyer, in which he said that the last summer was particularly unfavorable to the keeping of ointments; that he had to keep most of them in the cellar, and one or two in the refrigerator. Even resin cerate "ran" this hot summer. He also said that he had a little trouble in getting a pure lard, and it seemed as if it were adulterated with a min-

eral oil (so called). He has, however, succeeded in getting a fair lard lately. The doctor of to-day, he said, generally prescribes an ointment according to his own ideas, and as a base a number write for petrolatum, while others prescribe certain proprietary ointments.

Professor Kraemer remarked that there was one feature in connection with the subject which had not been referred to, and that was the influence of temperature in making ointments; that in a series of experiments recently published by Messrs. Kahlenberg and Ruschaupt an ointment made at a higher temperature contained a greater amount of the oleate; that zinc ointment, for instance, when made at 150° C. contained a greater amount of zinc oleate. These same authors showed that lanolin was the best base in making ointments, and that lard with wax (as in ceratum) was an improvement on lard alone.

Replying to the several speakers, Mr. Wilbert said that he admitted in the paper that physiological experiments would indicate that many drugs are more readily absorbed from a base made up of animal fats, especially one containing water. On the other hand, he still held that this question is an open one from a practical standpoint. From years of experience he believes that drugs, especially those readily soluble in water, when made into a solution and incorporated into an ointment in which petrolatum is used as the base, will be quite readily absorbed. Water appears to play a very prominent part in the absorption of drugs from ointments, and he said that from 1-5 per cent. of water can be readily added to a petrolatum ointment.

In regard to petrolatum of the U.S.P., there would seem to be but little necessity of continuing this preparation under two distinct titles. The manufacturers, as a rule, furnish a petrolatum that conforms as nearly as possible to the requirements of both titles, having a melting point of about 45° C., and seldom varying more than 2° either way. This insures a solid ointment in even the warmest weather, and one that does not become hard or brittle at ordinary winter temperatures.

In referring to lard he did not mean to say that it was impossible to obtain a pure lard, but that the lard obtained by the druggist through his usual source of supply, the butcher or grocer, did not come up to the requirements of the Pharmacopœia.

In regard to making the official ointment of nitrate of mercury,

which is largely a chemical compound, it would be self-evident that an inert base could not be substituted for the lard oil.

The exhibition of specimens being next in order, Professor Moerk exhibited a specimen of carborundum as a product of the electrical furnace. He also exhibited a number of articles made from asbestos by the Keasby & Mattison Co., such as steam-pipe coverings, asbestos paper, pads, etc., and also a specimen of dolomite from which the magnesium carbonate is extracted.

In reply to a question as to the use of asbestos paper for filter paper by Professor Remington, Dr. Mattison said that its use for this purpose was prevented because of it not having sufficient tensile strength, and that in Germany an asbestos cloth is used in filtering sugar solutions.

Mr. Beringer exhibited a new water motor centrifuge which could be attached to any spigot, and with a pressure of 13 pounds a speed of 2,000 revolutions per minute might be obtained.

Mr. Gordon exhibited some plants which had been grown from seeds, and also furnished some notes on the "Culture of Drugs" (see this JOURNAL, p. 534).

On motion, the meeting adjourned.

H. K.

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#### MINUTES OF THE SEMI-ANNUAL MEETING OF THE PHILADELPHIA COLLEGE OF PHARMACY.

The regular semi-annual meeting of the members of the Philadelphia College of Pharmacy was held on September 24th. In the absence of the President, Mr. Howard B. French, Mr. William J. Jenks, First Vice-President, occupied the chair.

Thirty-two members were present.

The minutes of the quarterly meeting, held June 25th, and of the adjourned meeting, held July 10th, were read and approved as read. The minutes of the Board of Trustees for the meeting held September 4th were read by the Registrar, W. Nelson Stem, and approved as read.

The report of the delegates to the Pennsylvania Pharmaceutical Association meeting, held at Ebensburg, June 26th-29th, was presented by the chairman, H. L. Stiles, who stated that, as the proceedings had been largely published (see AM. JOUR. OF PHARM., August number, pages 382-388), a detailed report was not presented. Mr. McIntyre added to the report, stating that the Association had reaffirmed the position taken a few years ago that "Graduation from an accredited college of pharmacy should be required before examination by the State Pharmaceutical Examining Board," and that the National Association of Retail Druggists, at its recent meeting at Detroit, had taken the same stand.

Mr. George M. Beringer, Chairman of the Committee on Revision of By-Laws, presented the revised Code of Ethics. After discussion by several of the members, it was, on motion, ordered to lie over for action at the meeting in December next.

In this connection, it was stated that the last revision of the Code of Ethics was made about 1840.

Mr. George M. Beringer, for the Committee on Revision of By-Laws, read a proposed addition to the By-Laws, stating that some of the members believed a change from the present mode of electing officers and trustees was desirable, and that the Committee had been asked to present a plan for the consideration of the members.

The report is as follows:

Proposed new By-Law to be Article VIII, Section 19.

A Committee on Nominations shall be appointed annually at the stated meeting in June. This Committee shall consist of five members, but not more than two of these shall be members of the Board of Trustees, and no member shall serve on this Committee for more than two years consecutively.

It shall be the duty of this Committee to report to the College, at the semi-annual meetings, one or more names for each office to be filled, and for Trustees at least one name more than the number of vacancies to be filled.

The Committee shall send to the Secretary, at least two weeks prior to the date of the election, a list of the proposed nominations, and such list shall be sent to each member with the notice of the meeting.

Any three or more members may propose a candidate by submitting to the Secretary in writing such proposition at least two weeks in advance of the meeting. All names so proposed are to be included in the list of nominations sent to members, and also the names of the proposers.

The nominations may be reopened on the day of election by the vote of a majority of the members present.

In the event of the Committee failing to submit nominations for any office, the meeting shall nominate.

The report was received, and after remarks by several of the members, it was voted to have the proposed by-law published in the AMERICAN JOURNAL OF PHARMACY for the information of members, and that action thereon be deferred till the next meeting of the College.

Announcement was made of the death of our fellow-member, James G. Wells, which occurred at his summer residence, New Centreville, Chester County, on July 19th, and was buried from his city residence, 1112 Wallace Street, on July 23d. Mr. Wells became a member of the College in 1872.

The subject of copyrighting the diploma and seal of the College was introduced, and after remarks by Professors Remington, Sadler and Mr. Kline, the matter was referred to the President for consideration and action.

The election of three Trustees being now in order, nominations were made, and W. L. Cliffe and E. M. Boring appointed tellers, who, after a ballot, reported the re-election of Mahlon N. Kline and William E. Krewson and Henry N. Rittenhouse—newly elected—for the term of three years.

No further business, on motion, adjourned.

C. A. WEIDEMANN, M.D.,  
Secretary.